REMARKS/ARGUMENTS

Claims 1-21 remain in the application. Claims 1, 3-5, 8-10 and 16-19 are currently amended. Claim 13 is cancelled.

Information Disclosure Statement

The Examiner is thanked for notifying the Applicant as to the acceptance and consideration of the Information Disclosure Statement submitted by the Applicant on October 31, 2003.

Claim Rejections Under 35 USC § 102

Claims 1-5, 8-10 and 14-19 were rejected under 35 USC § 102(b) over US Patent 6,648,376 to Christianson.

The present invention, as recited in amended claim 1, is not anticipated by Christianson, which teaches a flexible, sectioned plastic arm for a showerhead having a series of interconnected ball-and-socket (B&S) sections **10** between a shower pipe connection **12** and a shower head connection end piece **14**. Each B&S section **10** "has a through hole and the sections and end pieces are arranged so that the through holes of the series of sections and end pieces communicate to provide a passageway or lumen through the entire arm." Column 2, line 60-column 3, line 14. A flexible plastic tube **20** extends through the arm. Column 4, lines 22-27.

The ball-and-socket (B&S) sections **10** are fitted together to form "bendable but rigid joint between each pair of adjacent sections." Column 3, lines 15-35.

A series of short tubular sleeves **16** keep the ball-and-socket (B&S) sections **10** from bending too far, as follows:

> Positioned inside the through hole or lumen of the B&S sections is a series or chain of metal bend-limiting tubes, cylinders, or sleeves **16**. Each sleeve is made of rust-resistant metal that is thin, yet thick enough to be **rigid** and withstand a force imposed upon it by the end or edge **10E** of its surrounding ball end during bending, as will be discussed. The sections are contiguous or very close and are aligned with the surrounding B&S sections such that edge **10E** of each ball **10B**

surrounds or is aligned with a mid-portion area of each sleeve **16**. Column 3, lines 48-57.

When the use[r] bends the entire arm, e.g., as shown in FIG. 3, each ball end **10B** will swivel with respect to its socket end **10S** as indicated. Plastic tube **20** and the chain of sleeves **16** will also bend with the B&S sections, as shown. Note how the outer ends of sleeves **16** separate upon bending and the inner ends are jammed together. The chain of sleeves [**16**] will expand during such bending, but spacers **18** will accommodate such expansion by allowing the sleeves [**16**] [to] compress the spacers. The spacers hold the sleeves in proper position and keep the series of sleeves from shifting position, regardless of its length.

When the arm is bent far enough, the edges of ball ends **10B** will swivel or pivot far enough to contact the outside of the adjacent sleeve or metal tube **16**, as indicated at points of contact **10C**. The chain or series of sleeves [**16**] is positioned so that at least one end of each B&S sections is adjacent and surrounds a wall portion of a sleeve [**16**] between its opposite ends, so that when the arm is bent, one end of at least one B&S section will contact and press against a sleeve's [**16**] wall portion. When such contact occurs, the metal tube or sleeve [**16**] stops any further swiveling of the ball end in its socket, so the user cannot bend each joint farther unless great force is used. As a result of the sleeves' overbending prevention function, the ball ends cannot be swiveled far enough to cause the ball of one section to hit the edge or skirt of its socket and pry itself out of its socket. Thus the user cannot easily overbend the arm or cause any ball to be pried out of its socket.

When the arm is straightened back, the sleeves [**16**] will resume their normal orientation, as shown in FIG. 2. The spacers will expand evenly to keep the chain of sleeves [**16**] in position, i.e., the midsections of the sleeves will remain aligned with the edges of the respective ball ends.

If the user bends only one or several joints of the arm (not shown) the sleeves [**16**] will prevent overbending in the same manner, except that fewer sleeves [**16**] will be involved.

Column 5, lines 19-54.

The sleeves **16** are metal and very short. "Metal sleeves 16 each were made of brass 0.635 mm thick with an outside diameter of 1.087 cm and a length of 1.778 cm." Column 4, lines 54-56.

Christianson also teaches an embodiment shown in **Figure 7**, wherein the endmost B&S section **10** is replaced by a "new bottommost pivotable end section **24**" having a "distal portion" that has no ball, but instead has an elongated cylindrical part **24C**, the distal end of which extends into and is surrounded by ridge **14C"**. "End piece **14C** preferably is attached to bottommost pivotable section 24 by ultrasonic welding." Column 6, lines 39-60.

Christianson fails to anticipate the present invention, which is a flexible support apparatus having a permanently bendable solid metal rod having a first end fused directly to the support base, and having a second end fused directly to a mounting bracket.

In contrast, Christianson teaches an arm of ball-and-socket sections **10** filled with a "chain" of individual sleeves **16** formed as short tubes, having only "a length of 1.778 cm." Column 4, lines 54-56. The tube sleeves **16** are "rigid." Column 3, lines 48-57. In fact, if the tube sleeves **16** of Christianson were "bendable," they could not perform their intended purpose of limiting the bending of the ball-and-socket sections **10**.

Thus, Christianson fails to anticipate both the solid metal rod of claim 1, and the permanently bendable feature of the rod. Rather, Christianson teaches only (1) sleeves **16** formed as short tubes, and (2) the tube sleeves **16** being "rigid."

For at least the above reasons, claim 1 is not anticipated by Christianson, and is believed to be allowable.

Claims 1-8 are allowable at least as depending from allowable claim 1.

Claim 5 is further allowable independently of allowable base claim 1 as reciting the support base and mounting bracket each being formed of an ultrasonically weldable plastic material, and further being welded directly to the metal rod. Rather, Christianson fails to specify

any kind of material, at least for the "new bottommost pivotable end section **24**." See, column 6, lines 39-60. Therefore, Christianson cannot anticipate the metal rod being welded directly to the plastic support base and the plastic mounting bracket, as recited in claim 5.

For at least the above reasons, claim 5 is not anticipated by Christianson, and is believed to be allowable independently of allowable base claim 1.

Christianson fails to anticipate the inventions of claims 9 and 16. Amended claims 9 and 16 differ in scope from allowable claim 1. However, the above arguments directed to claim 1 are sufficiently applicable to claims 9 and 16 as to make repetition unnecessary. Thus, for each of the reasons above, claims 9 and 16 are believed to be allowable over the cited art. Claims 10-15 are allowable at least as depending from allowable claim 9, and claims 17-21 are allowable at least as depending from allowable claim 16.

Claim 10 is further allowable independently of allowable base claim 9 as reciting the support base and mounting bracket each being formed of an ultrasonically weldable plastic material, and further being welded to the metal rod by ultrasonic weld joints. Rather, as discussed above in regard to claim 5, Christianson fails to specify any kind of material, at least for the "new bottommost pivotable end section **24**." See, column 6, lines 39-60. Therefore, Christianson cannot anticipate the metal rod being welded directly to the plastic support base and the plastic mounting bracket, as recited in claim 10.

For at least the above reasons, claim 10 is not anticipated by Christianson, and is believed to be allowable independently of allowable base claim 9.

Claim 17 is further allowable independently of allowable base claim 16 as reciting molding each of the support base and mounting bracket of an ultrasonically weldable plastic material, and further ultrasonically welding the metal rod to the support base and mounting bracket. Rather, as discussed above in regard to claim 5, Christianson fails to specify any kind of material, at least for the "new bottommost pivotable end section **24**." See, column 6, lines 39-60. Therefore, Christianson cannot anticipate ultrasonically welding the metal rod to the plastic support base and the plastic mounting bracket, as recited in claim 17.

For at least the above reasons, claim 17 is not anticipated by Christianson, and is believed to be allowable independently of allowable base claim 16.

The Examiner has clearly failed to cite any reference showing a flexible support apparatus having a permanently bendable solid metal rod that is ultrasonically welded to opposing support base and mounting bracket, and further wherein either the support base or the mounting bracket is formed of an ultrasonically weldable plastic material, according to the present invention and as recited in the claims.

Claim Rejections Under 35 USC § 103

Claims 6, 13, 20 and 21 were rejected under 35 USC § 103(a) over US Patent 6,648,376 to Christianson in view of US Patent 5,842,670 to Nigoghosian.

Claim 6 depends from base claim 1 which is not made obvious by Christianson, which fails to disclose or suggest **both** the solid metal rod, and the permanently bendable feature of the rod, as recited in claim 1. Rather, as discussed above, Christianson teaches only (1) sleeves **16** formed as short "tubes," and (2) the tube sleeves **16** being "rigid."

Furthermore, because Christianson teaches an arm for a showerhead, the teaching of Christianson absolutely requires a tube to flow water there through. Thus, Christianson actually teaches away from the solid rod of the present invention, as recited in claim 1, because the invention of Christianson will not function for its intended purpose, flowing water there through, if a solid rod is substituted for the tube sleeves **16**.

In fact, in the Office Action dated September 15, 2004, in the first sentence at the top of page 4, the Examiner admits, and the Applicant agrees, that "Christianson does not teach that the rod is a solid metal rod."

For at least the above reasons, claim 1 is not made obvious by Christianson, and is believed to be allowable there over.

Nigoghosian fails to provide the deficiencies of Christianson. Nigoghosian teaches a hair dryer support formed of a base from which projects a flexible tube. At the other end of the flexible tube a hair dryer holder is arranged to receive a hair dryer. See, Abstract.

Thus, Nigoghosian teaches a "flexible tubing" **14** having a connector **16** "crimped" to one end. "The flexible tubing **14** includes at one end a connector **16** which may be crimped or otherwise fastened to the flexible tubing **14**. The connector 16 includes a threaded portion **18** which engages corresponding threads **20** formed on the base **12**." Column 2, lines 42-46.

"At the other end of the flexible tubing, a second connector **22** is crimped or otherwise fastened to the second end of the flexible tubing **14**. The second connector **22** also includes a threaded portion **24** which engages the threads (not shown) of an adapter **26** which interconnects the hair dryer holder or ring **28** to the second end of the flexible tubing **14**." Column 2, lines 47-54.

The base assembly **12** of hair dry stand **10** is a two-piece assembly including a decorative outer layer **44** and a supporting inner layer **46**. Column 3, lines 1-12.

Inner layer **46** comprises a bottom plate **48** from which projects a boss **50** having threads **20** which receive threaded portion **18** of connector **16**. Column 3, lines 13-15.

"FIG. 5 shows the construction of the flexible tubing **14**. The flexible tubing **14** is generally comprised of a long, thin ribbon **38** formed with a metallic material. The ribbon **38** is formed with a groove **40** and a lip **42**. When the ribbon **38** is wound, the groove **40** and lip **42** cooperate to form the wound flexible tube **14**." "[A]ny flexible tubing ... will work as well." Column 3, lines 28-40.

Obviously, Nigoghosian fails to disclose or suggest **both** the solid metal rod of claim 1, and the permanently bendable feature of the rod, as recited in claim 1. Because Nigoghosian teaches only a flexible tubing **14**, Nigoghosian fails to disclose or suggest the solid metal rod, as recited in claim 1.

Furthermore, because Nigoghosian fails to disclose or suggest the solid metal rod, as recited in claim 1, Nigoghosian must also fail to disclose or suggest the solid rod being "bendable," as is also recited in claim 1.

Additionally, Nigoghosian teaches only "crimped" connections between the flexible tubing **14** and the connector **16** on one end, and also teaches only "crimped" connections between the flexible tubing **14** and the second connector **22** on the second end. Column 2, lines 42-54. Thus, Nigoghosian also fails to disclose or suggest the permanently bendable solid metal rod being fused directly to the support base and being fused directly to the mounting bracket, as recited in claim 1.

Thus, Nigoghosian fails to provide the deficiencies of Christianson.

For at least the above reasons, claim 1 is allowable over Christianson in view of Nigoghosian. Claim 6 is allowable at least as depending from allowable claim 1.

Claim 13 depends from base claim 9.

Claims 20 and 21 both depend from base claim 16.

Amended base claims 9 and 16 differ in scope from allowable claim 1. However, the above arguments directed to claim 1 are sufficiently applicable to claims 9 and 16 as to make repetition unnecessary. Thus, for each of the reasons above, claims 9 and 16 are believed to be allowable over the cited art. Claim 13 is allowable at least as depending from allowable claim 9, and claims 20 and 21 are allowable at least as depending from allowable claim 16.

Claims 7 was rejected under 35 USC § 103(a) over US Patent 6,648,376 to Christianson in view of US Patent 5,842,670 to Nigoghosian, and further in view of US Patent 6,637,642 to Lingnau.

Claim 7 depends from base claim 1 which is not made obvious by Christianson. As discussed above, Christianson fails to disclose or suggest **both** the solid metal rod, and the permanently bendable feature of the rod, as recited in claim 1. Rather, as discussed above, Christianson teaches only (1) sleeves **16** formed as short "tubes," and (2) the tube sleeves **16** being "rigid."

Furthermore, as discussed above, because Christianson teaches an arm for a showerhead, the teaching of Christianson absolutely requires a tube to flow water there through. Thus, Christianson actually teaches away from the solid rod of the present invention, as recited in claim 1, because the invention of Christianson will not function for its intended purpose, flowing water there through, if a solid rod is substituted for the tube sleeves **16**.

In fact, in the Office Action dated September 15, 2004, in the first sentence at the top of page 4, the Examiner admits, and the Applicant agrees, that "Christianson does not teach that the rod is a solid metal rod."

For at least the above reasons, claim 1 is not made obvious by Christianson, and is believed to be allowable there over.

As discussed above, because Nigoghosian teaches only a flexible "tube" 14 with "crimped" connections, and connectors with "threaded" connections, Nigoghosian fails to provide the deficiencies of Christianson.

In the Office Action dated September 15, 2004, in the fourth paragraph of page 4, the Examiner admits, and the Applicant agrees, that "Christianson and Nigoghosian ... do not teach that the metal rod is [made] of upset metal finish or upset surface material."

Lingnau fails to provide the deficiencies of Christianson and Nigoghosian. Lingnau fails to disclose or suggest the ends of the metal rod further comprise an upset metal finish, as originally recited in claim 7.

Lingnau teaches a solid state welding process that is limited to metal-to-metal welds. "This invention relates to an improved method of solid state welding metal parts particularly, but not exclusively, ferrous or titanium metal parts." See, e.g., column 1, lines 8-10. "The solid state welding method of this invention may be utilized for joining metal parts together particularly but not exclusively ferrous and titanium and metal parts including pipes or tubes, wherein the metal parts to be welded have opposed generally planar and parallel surfaces. The method of this invention then includes quickly heating the opposed surfaces of the metal parts with a high frequency induction heater to the hot working temperature of the metal parts in a non-oxidizing atmosphere." See, column 5, lines 30-38.

The process taught by Lingnau is a solid state welding process for butt welding pipes, wherein the parts to be welded are induction heated to the hot working temperature so that it is possible to greatly reduce the rotational velocity of the workpiece. Column 5, lines 1-12.

The process taught by Lingnau results in a much smaller volume of ejected metal commonly known as "flash" or "upset." Column 4, lines 60-66.

The Examiner contends that Lingnau teaches that the upset finish of the metal can and will affect the welding profile, and cites column 8, lines 6-24.

The Examiner misunderstands the cited paragraph, which reads as follows:

> Although the most logical choice of a shielding gas is argon, experimentation has shown that argon causes arcing near the end of the heating cycle presumably due to the combined effects of the electric field from the coil and the infrared radiation from the faying surfaces. It has been found that nitrogen as a shielding gas eliminates arcing. Arcing may also be prevented by coating the induction coil with a high dielectric strength electrical insulator. It is critical that the induction coil be carefully designed to develop a uniform induced current density across the

faying surfaces. Experimentation has shown that the geometry of the **flash upset** and the finish weld profile are strongly affected by the dimensions of the coil relative to the tube dimensions as discussed more fully hereinbelow. As set forth above, however, the overall form of the **flash upset** is completely different from that **produced** by conventional frictional welding and the flash is substantially reduced by the solid state welding method of this invention. Column 8, lines 6-23.

Rather than the metal being "upset" to produce an improved weld, the upset is "produced" by the weld process. Furthermore, as disclosed by Lingnau, the "flash upset" produced by the weld process actually degrades the weld strength and "should be removed."

FIG. 1A illustrates a welded tube or pipe formed by conventional friction welding techniques, such as conventional inertia or friction welding. The tube portions or workpieces **T1** have been welded as described above by rotating one of the workpieces relative to the other workpiece, then driving the opposed generally planar parallel surfaces of the workpieces together which creates sliding friction, thereby heating the opposed surfaces to the hot working temperature and welding the surfaces together. The most distinguishing feature of the weld is the shape and size of the wasted flash material on both the inside and outside surfaces of the weld that has the appearance of a double torus. A cross sectional view of the flash material shows that it is actually twin cusps, back to back as depicted in FIG. 1A. In many applications, this flash detail **F1** should be removed; however, it is not always possible to remove the upset flash on the inside of the tube or pipe, depending upon the diameter of the tube or pipe. Further, as set forth above, the large flash volume results in **degradation** of the weld strength due to concentration of non-metallic inclusions from the loss of length into the weld interface. The improved solid state welding method of this invention therefore not only reduces the loss of material and length during the welding cycle, but also improved structural integrity. Column 10, lines 39-62.

Thus, Lingnau does not disclose or suggest providing an "upset metal finish" on the material to be welded, as recited in claim 7. Rather, in stark contrast to the present invention,

Lingnau actually teaches reduction and removal of "flash upset" that is produced by the weld process.

Furthermore, because Lingnau teaches that the "flash upset" results in **degradation** of the weld strength, and that it should be removed, Lingnau obviously teaches away from intentionally providing an upset metal finish on the material to be welded, as recited in claim 7.

Additionally, Lingnau teaches "the metal parts to be welded have opposed generally planar and parallel surfaces." Column 5, lines 30-34. Also, in the example of joining two cylindrical, hollow workpieces, Lingnau teaches that the workpieces "are provided with clean, smooth, square-cut parallel ends." Column 11, lines 48-50.

Thus, Lingnau completely fails to disclose or suggest providing any upset metal finish on the parts to be welded, as recited in claim 7. Rather, Lingnau clearly teaches away from such upset material as resulting in "degradation" of the weld joint.

For at least the above reasons, claim 7 is believed to be allowable as originally recited.

Claims 11 and 18 also recite the upset metal finish.

Claims 11 and 18 differ in scope from allowable claim 7. However, the above arguments directed to claim 7 are sufficiently applicable to claims 11 and 18 as to make repetition unnecessary. Thus, for each of the reasons above, claims 11 and 18 are believed to be allowable over the cited art.

The Examiner has failed to cite any reference showing a flexible support apparatus having a permanently bendable solid metal rod ultrasonically welded to opposing support base and mounting bracket, wherein either the support base or the mounting bracket is formed of an ultrasonically weldable plastic material, according to the present invention and recited in the claims.

The claims now being in form for allowance, reconsideration and allowance is respectfully requested.

If the Examiner has questions or wishes to discuss any aspect of the case, the Examiner is encouraged to contact the undersigned at the telephone number given below.

Respectfully submitted,

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